Executive Summary

This comment pertains specifically to the Amateur Radio Service as outlined in Amateur Service, Part 97.

The Federal Communications Commission (FCC) defines and regulates the Amateur Radio Service in accordance with the provisions established by the International Telecommunications Union (ITU) and Sector Member International Amateur Radio Union (IARU). As per their definition, amateur radio is “a radio communication service in which radio apparatus are used for the purpose of self-training, intercommunication, or technical investigation by individuals who are interested in radio technique solely with a personal aim and without pecuniary interest.” (Source: https://www.iaru.org/amateur-radio) Since the US is a signatory to the treaties that establish and govern the ITU, the rules in Part 97 should only reflect or amplify the basis and intent of those rules and regulations set about for our service internationally, not vice versa. The recommendations in this response to the FCC RFC 25-133 highlight outdated portions of the Part 97 provisions that hinder technological innovation within the amateur community and introduce unnecessary regulatory burdens on government agencies.

Benefits of the Amateur Radio Service to the US Government and the American Public

The Amateur Radio Service provides two significant benefits to the US government and the general public:

1. In recent years, Amateur Radio has experienced a resurgence of the innovative spirit that initially led to its creation. This resurgence is fueled by the rapidly growing field of Open Source

hardware and software-defined transceivers, which are emerging almost weekly. Artificial intelligence software has further accelerated this pace of innovation, enabling modeling of complex radio frequency circuits and antennas on laptops and tablet computers in mere seconds. These innovative technologies have led to the formation of new small businesses employing 21st-century manufacturing techniques. These businesses create jobs and generate worldwide demand for products manufactured in the US. Some of these small companies will grow and revitalize radio-related manufacturing in the US, while others will be acquired or merged into existing companies with the resources to capitalize quickly on new technologies. By providing our US 'amateurs' with lawful access to certain radio frequency bands, these benefits to the US economy and technological superiority are achieved without any cost to the public or the US government.

2. The US Amateur Radio Service plays a crucial role in providing communications during crises and catastrophic events. This aspect of its existence has gained renewed interest within the amateur radio community, as evidenced by numerous reports of 'hams' offering vital assistance in recent violent storms and local crises. With the government's plans to reduce FEMA's size and transfer disaster mitigation responsibilities to the states and local authorities, the critical communications resources provided by amateur radio organizations and individual operators become even more essential.

Recommendations

Issue (1) Simplify the frequency-based privilege model

The International Telecommunications Union (ITU) provides a set of “Minimum Qualifications of Radio Amateurs” in its ITU-R M.1544-1 document, dated September 2015 (Source: https://www.itu.int/rec/R-REC-M.1544-1-201509-I/en). This document outlines that any individual seeking a license to operate in our service must demonstrate a “theoretical knowledge” of various aspects, such as international and domestic radio regulations, communication methods (not

proficiency), including radiotelephony, radiotelegraphy, data, and imaging. Additionally, it specifies that licensees in our service should possess a minimum understanding of radio system theory, encompassing transmitters, receivers, antennas, propagation, and measurements. Furthermore, these qualifications include a brief mention of radio emission safety, operating procedures, electromagnetic compatibility, and avoidance and resolution of radio frequency interference.

Until the early 1950s, most US amateur radio operators shared the same privileges. With the exception of Novice and Technician licensees, all US hams (General, Advanced, and Extra Class) could operate on the same frequencies and use any emission mode they desired. However, in 1968, the United States underwent a significant transformation in its licensing system. It transitioned from a simple evaluation of an individual's competence in ensuring the safe and non-interfering operation of radio bands, as outlined in the International Telecommunications Union's "minimum requirements" documents, to an achievement-based licensing system. This new system incorporated built-in incentives to enhance an individual's overall knowledge of radio communication theory and practice. As a reward, individuals earned a series of "diplomas" and gained access to an expanded frequency spectrum. While the objectives of this incentivized licensing system are commendable, they lead to an intricate system of frequency-based privileges tied to one's license class. These restrictions can be confusing to less-experienced operators and may result in accidental violations of privileges. Even experienced operators may inadvertently violate their privileges when using unfamiliar equipment or operating under emergency conditions.

Recommendation

Replace the current frequency-based privilege model with one that is easily enforceable and understandable. For instance, provide all licensees with the full range of amateur radio frequencies and establish Peak Effective Power (PEP) limitations based on each class. One possible approach is to limit Technician

licensees to 50 watts PEP, General licensees to 500 watts PEP, and Extra class licensees to the full 1,500 watt PEP limit.

Issue (2) Remove the Amateur Radio Technician License class entirely

The Amateur Radio community is engaged in a significant discussion regarding the limited privileges granted to Technician class licensees. These privileges are considered insufficient to encourage long-term participation in the Service. Furthermore, the disparities in privileges between General and Amateur Extra class licenses are insufficient to genuinely foster advancement within the Service.

Recommendation

Remove the Technician Class license tier altogether and retain the General and Amateur Extra classes as they are. As mentioned in issue (1), instead of minor frequency-based advantages for obtaining an Extra class license, increased power limits (or possibly additional modes of operation) would provide more substantial incentives to obtain the top-tier License class. Furthermore, offering the high frequency bands to everyone obtaining their introductory Amateur Radio license would significantly improve the retention rate of individuals entering the Service for the first time.

Issue (3) Shorten the term of Amateur Radio licenses

The current term of Amateur Radio licenses, spanning 10 years, is a relatively long period. Consequently, a substantial number of unused callsigns may arise due to individuals who have ceased their active participation in the Amateur Radio Service. Moreover, a 10-year term misses an opportunity to generate a more substantial revenue stream through renewal fees.

Recommendation

To enhance funding for FCC operations related to the Amateur Radio Service, consider shortening the term of an Amateur Radio License to 5 years (or less). Set the license fee for individuals below the age of 18 passing their first license exam to $5.00; renewal and license upgrade fees for those under the age of 18 to $5.00. Keep the license fees for those aged 19 and above as-is, with the exception of renewal fees to be set at $15.00 if the license term is reduced to 5 years; set the renewal fee to $5.00 if the license term is set to a shorter length.

Issue (4) §97.317(2) Standards for certification of external RF power amplifiers

This rule currently states:
"Not be capable of amplifying the input RF power (driving signal) by more than 15 dB gain. Gain is defined as the ratio of the input RF power to the output RF power of the amplifier where both power measurements are expressed in peak envelope power or mean power."

This rule was established when commercially manufactured Amateur Radio transceivers emitted an average power of around 100 watts, while Citizens Band transceivers were restricted to a maximum power of 5 watts. Consequently, it was believed that a gain limitation would not pose a significant challenge for amateur radio operators while effectively curbing the use of unauthorized amplifiers in the Citizens Band.

Recommendation

Delete this verbiage from the rule, as it is no longer necessary. Modern amplifiers can be disabled for the Citizens Radio Service based on frequency, with high precision in the measured frequency due to the use of microprocessors and crystal-

controlled digital frequency counters. Many modern amplifiers already measure frequency with high precision as part of their normal operations, so all that's needed for such amplifiers is a software change. Additionally, modern Amateur Radio transceivers can utilize more than 15 dB of gain without emitting spurious harmonics or causing interference.

Issue (5) §97.317(3) Standards for certification of external RF power amplifiers

This rule currently states:
"Exhibit no amplification (0 dB gain) between 26 MHz and 28 MHz."

This rule aims to prevent the use of amplifiers with Citizens Band transceivers. However, this specification is overly broad for today's amplifiers. The exact frequency limits of the Citizens Radio Service and nearby commonly used frequencies can be specified for locking out without interfering with other services. As written, the gain restriction reaches the lower edge of the Amateur 10-Meter band.

Recommendation

Reduce the 0 dB gain band to the practical minimum required for lockout of Citizens Band radios and commonly misused nearby frequencies. However, allow:

- Frequencies legally used by Radio Amateurs.
- Frequencies that Amateurs might legally use while traveling in other nations.
- NTIA-allocated frequencies used by the Civil Air Patrol and the Military Amateur Radio Service, services in which Radio Amateurs often participate.

Issue (6) Rules §97.305 through §97.309

The rules outlined in §97.305 through §97.309 specify a limited range of modes, modulations, and digital data codes that Radio Amateurs are permitted to use on the airwaves. These rules, which originated during the analog era, have become outdated and restrictive, hindering innovation in the Amateur Service.

The FCC-enforced Amateur band-plan enacted in §97.305 through §97.309 was designed to protect narrow-band modes, primarily radiotelegraphy (defined as a digital mode), from interference by wide-band modes, primarily voice communications. Voice is allowed in limited sub-bands, while
telegraphers can operate in both the exclusively digital sub-bands and the voice bands. With the advent of digital communication this plan is broken, because “voice” modulations are limited to be used in voice band segments, while “digital” modulations, which can carry voice as well
as many different kinds of information, are admitted to band-segments that were previously the protected domain of telegraphy.
If a protected sub-band is required for telegraphy, excluding voice modes, that sub-band should be specified for operation with a narrow bandwidth, for example 100 Hz, rather than a particular modulation designator.

Current microprocessor-based or computer-assisted transceivers are capable of transmitting data packets containing many different payloads. Under the old scheme, each of these payloads would have a different letter in the modulation designator, and each would be a different modulation under the law. The time when modulation designators could reflect the continuous content of a communication is past.

The FCC must initiate a new Proposed Rulemaking process for each new modulation and mode technology, placing unnecessary administrative burdens in the agency.

Recommendation

Replace the rules in §97.305 through §97.307 with a regulation-

by-bandwidth plan similar to the one defined by Innovation, Science and Economic Development of Canada. This Agency has had a regulation-by-bandwidth plan in place for at least a decade without any reports of interference from US Amateurs who share most Amateur Frequencies with Canada and are within easy range of their communications. Canada's regulation-by-bandwidth rules simply specify frequency bands and the maximum permissible transmitted bandwidth within those bands. Within this framework, the Canadian Radio Relay League (CARL) further specifies a band plan that suggests sections of the bands that are to be used for specific modes. Under such a regulation-by-bandwidth scheme, any modulation, mode, or type of data payload would be permitted as long as it fits the specified bandwidth.